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Social barriers in wind power implementation in The Netherlands: Perceptions of wind power entrepreneurs and local civil servants of institutional and social conditions in realizing wind power projects

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Abstract

The primary social factors for the implementation of wind energy projects in a liberalized market are entrepreneurs willing to invest. Understanding conditions that trigger entrepreneurs to invest in these projects, and understanding conditions that determine the chance of success for entrepreneurs to implement and exploit their projects, is vital for setting up effective policies to stimulate wind electricity generation. This paper analyses the way in which wind power entrepreneurs and local civil servants experience social and institutional conditions in the operational process of realizing wind power projects, and their perceptions of policy implications. A groups support system in an electronic board room was used to analyze the perceptions. From the analysis it was concluded that wind power entrepreneurs and civil servants share the opinion that the institutionally embedded power position of local politicians, and the sensitiveness of the local political debate for the popular opinion are most critical for project realization. With regard to the proposed solutions, both groups differ in their approach. Entrepreneurs stress procedural solutions, such as limiting the possibilities to appeal, reducing the complexity of the formal authorization trajectory and using a top down planning approach. Civil servants stress more strategic solutions, such as providing more public information on the necessity of wind power for local politicians and citizens, and community

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involvement in planning processes. Finally, the analysis explains that steering strategies that have been developed at the national level to solve the planning problems at the operational level do not address the right problems.

Keywords: Wind power implementation; Perceptions; Institutional and social conditions; Market development

Contents

1. Introduction

Substantial changes, such as the liberalization of the electricity sector and the introduction of new policies to stimulate renewable electricity generation, characterize the electricity policy field in The Netherlands over the last decade. The Ministry of Economic Affairs has been the dominant player with regard to these national level changes in policy. The shaping of policies and planning of the electricity sector at the national level has affected the development of the wind power supply market. New wind power entrepreneurs emerged and shifts occurred in market shares of different entrepreneurial groups. However, wind power entrepreneurs come across a multitude of institutional conditions when fulfilling activities that are required for the implementation of wind turbines, such as spatial planning, permitting activities, grid connection and selling electricity on the power supply market. Not only national level strategic electricity policies and instruments, which are developed to stimulate wind power production, are relevant for wind power implementation, but also policies and instruments in other fields such as land use policy and law, environmental policy and law and nature conservation policy and law. These policies and instruments from different policy fields converge on the operational level of implementation, and constitute the institutional framework in which wind power entrepreneurs and other stakeholders involved in wind power implementation operate.

Securing sites and permits for wind turbines are conceived to be main challenges for wind power market development [1,2]. This paper aims to explore these challenges. We

analyzed perceptions of wind power entrepreneurs and local civil servants about their experience with social and institutional conditions in the operational process of wind power implementation. We have chosen to zoom in on wind power entrepreneurs because implementation of wind turbines and market development will not take place without entrepreneurs continually taking initiatives and risks. The choice to zoom in on local civil servant stems from the fact that in The Netherlands, planning decisions regarding wind power implementation are the responsibility of local councils. Moreover, the city council is the competent authority in several permitting procedures. Thus, ultimately, it is the local government level where upon implementation takes place. We conducted workshops in an Electronic Board Room (EBR) to analyze the perceptions and to generate new ideas for future wind power policy. The workshops did cover the degree to which social and institutional conditions in the operational process of wind power implementation affected the development of the market. The workshops furthermore served to reveal different perceptions between wind power entrepreneurs and local governmental authorities. The main question for this paper can be formulated as follows:

What are the entrepreneurial and local government perceptions of social and institutional conditions in the operational process of realizing wind power projects in The Netherlands, and what can be learned for future wind power policy?

Institutional conditions are defined as explicit formalized policies and rules on different government levels, imposed on all stakeholders by top-down decision-making procedures, such as the Electricity law (EL), the Spatial Planning Act (SPA), National Environmental Policy Plans (NEPP), the Environmental Management Act (EMA) and spatial planning and permitting procedures. Enforcement is guaranteed by a formal sanction system that makes the imposed rules operational. The framework of institutional conditions that is relevant for the development of the wind power supply market encompasses four policy fields, i.e. energy policy and law, land use policy and law, environmental policy and law, and nature conservation policy and law.

Social conditions are the ways in which different stakeholders deal with prevailing institutional conditions. Social conditions are actions of, and cooperation or competition between, a variety of stakeholders involved (wind power entrepreneurs, government authorities, landowners, environmental organizations and local residents) in line with their interests, strategies, resources and power positions.

Institutional and social conditions affect decisions of wind power entrepreneurs about investments in wind power and determine possibilities to actually implement wind power projects. The operational process of realizing a wind power project can be described on the basis of the subsequent steps that need to be taken to bring a wind power project on line, such as requiring land ownership, spatial planning, securing permits, carrying out environmental studies, purchase of the turbines and contracting for grid connection. An important part of this operational process is the authorization trajectory, which, dependent on the size and the location of a project, consists of 3–7 different procedures. The trajectory provides for formal deliberation and participation by administrative authorities, civic associations, market agencies and individuals. Different competent authorities on different government levels are involved in the implementation of the procedures. If coordinated and managed properly, total time required for the authorization trajectory is 1.5 to 2 years on average. This term is prolonged with at least a year in case of appeal at the litigation section of the Council of State. In addition,

due to time required for informal pre-deliberations the whole authorization trajectory last considerably longer, up to 5 or 6 years, with peaks up to more than 10 years (Appendix A provides an overview of procedures applicable to wind turbines onshore).

The paper is organized as follows. In Section 2, some background information is given on developments in the electricity policy field over the last decade. This national electricity perspective is coupled, in Section 3, to the development of the wind power supply market in terms of capacity installed. Important entrepreneurial groups are defined in this section and market shares of these entrepreneurial groups are given. Section 4 provides methodological information on the EBR. This is followed, in Section 5, by a description of steps, which are undertaken in the workshops. Sections 6 and 7 go into the perceptions of wind power entrepreneurs and local civil servants. These perceptions are compared in Section 8. Finally, in Section 9, we conclude with a reflection on the main findings.

2. Important developments in the electricity policy field

At national level, the Ministry of Economic Affairs has formal authority for electricity policy developments and budgets. Already in 1985, an ambitious goal of 1000 MW wind power in the year 2000 had been formulated and this goal was maintained as the official base for wind energy policy until 2000. In 2002, the Ministry of Economic Affairs raised the target to 1500 MW onshore in 2010. The original target of 1000 MW in 2000 was met in 2004.

Three major institutional changes have taken place in the electricity policy field over the last decade. First, the introduction of fiscal instruments since 1996 led to favorable economic circumstances. Second, the liberalization process that started in 1998 led to a better bargaining position of private wind power producers. The third institutional change was the liberalization of the green consumer market in 2001, which led to a large consumer demand for green electricity. In this section, we will briefly elaborate on these institutional changes.

The third Dutch white paper on energy that was published in 1995 anticipated the EU electricity market liberalization Directive 96/92/EC. It outlined the essentials of Dutch future electricity policy: liberalization of the electricity sector and the promotion of a sustainable energy supply. The white paper contained the first integral policy target of 10% renewable energy in 2020. The target for wind energy was 1000 MW by the year 2000. The renewable energy targets were developed further in the ‘Action Programme for Renewable Energy’, which was released early 1997. This programme, followed by the 1999 Energy Report, presented the preferred mix of policy instruments given the realization of the liberalized energy market. Three categories of policy support were advocated: (1) improvement of competitiveness by supporting research and development; (2) stimulating market penetration by greening the fiscal system and by liberalizing the renewable electricity market; and (3) reducing political and administrative bottlenecks by streamlining planning and permitting procedures [3, p. 1055].

Investment subsidies and the option of a compulsory share of renewable energy consumption were considered to be unfeasible under free market conditions. A switch to market-compatible policies and instruments was conceived unavoidable. Consequently, the start of 1996 saw an important turning point: the emphasis on subsidies shifted with the

greening of the fiscal system [4]. Subsidies were abandoned and fiscal instruments and demand side measures such as voluntary pricing schemes[1] were introduced [5].[2]

The 1998 Electricity Law created the framework for the liberalization of the market.[3] Private decentralized wind power producers were no longer obliged to sell their electricity to the regional energy distributor, which implicated that their bargaining power increased. As of July 2001, the green electricity market was the first segment of the retail market to be fully opened to competition. It was a critical test case for incumbents and new entrants in the electricity market, both from the point of view of marketing a commodity and of an efficient switch for customers [6]. Since then, consumers and small and medium sized enterprises have been free to choose their green energy company. Due to the greening of the fiscal system, suppliers were able to offer renewable electricity at the same or at even a lower price than for electricity from fossil-fuel sources. Such favorable economic conditions for wind power had never before been realized in The Netherlands. A drastic increase in demand occurred in the residential sector: at the end of 2004, 2.8 million consumers were buying green electricity, 40% of all households [7]. Many new suppliers entered the market: at the beginning of 2003, 26 different retailers offering 28 different green electricity products were active on the Dutch green electricity market.[4]

3. Development of the wind power supply market in figures

The Dutch wind power supply market is not a homogeneous set of factors. In this section we will describe the development of this market over the last decade, showing that in fact we need to distinguish at least four different types of entrepreneurs. They own the total capacity installed in The Netherlands (Figs. 1,2) [7, p. 2052].

- *Small private investors* (mainly farmers): this entrepreneurial group consists of farmers, other companies and sometimes individuals. Wind power exploitation is supplementary income for this entrepreneurial group. Their core business lies outside the energy sector.
- *Electricity sector* (energy distributors): this entrepreneurial group consists of companies that belong to the traditional energy sector. Wind power exploitation is a small business component in these companies. Their core business is producing and selling portfolio of (renewable) energy sources.

[1] In 1995, Essent, in cooperation with the environmental organisation WWF, was the first Dutch distributor that offered green electricity for voluntary purchase. By the year 2000, a number of 18 distributors offered green electricity for consumers who were willing to pay an additional price.

[2] In 2003, the government introduced a new scheme called environmental quality electricity production (abbreviated in Dutch MEP). MEP is a feed-in tariffs system. It is a supply side measure providing a fixed subsidy per kWh of domestically produced renewable electricity for a maximum of 10 years.

[3] For a detailed description of the liberalization of the Dutch electricity market over the period 1998–2004 is referred to Van Damme, 2005 [8].

[4] Nuon, a Dutch distributor sold 'Natuurstroom' (natural electricity), which consisted mainly of wind and solar electricity (both domestic and imported); biomass explicitly excluded. In contract, Essent sold 'Groene Stroom' which consisted of domestic green electricity (mainly biomass) and explicitly excluded imports. Yet other companies used other terms for green electricity, such as 'Eco stroom' (eco electricity) and 'Winduniestroom' (wind electricity).

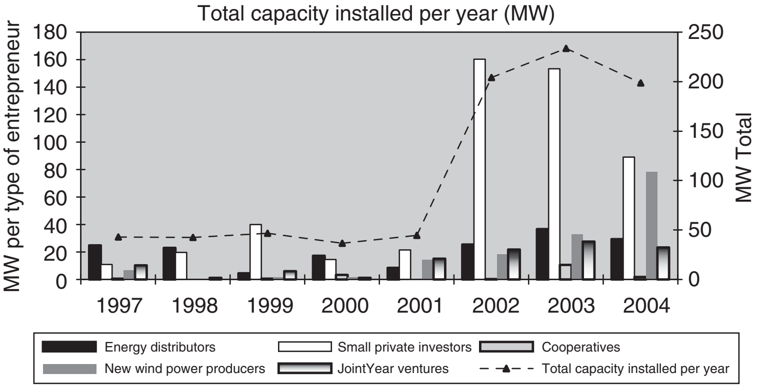


Fig. 1. Wind power capacity installed per year (MW) [9,10].

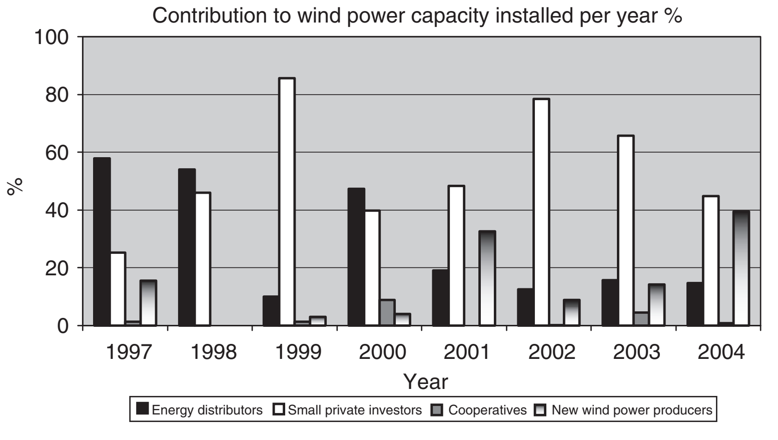


Fig. 2. Contribution to wind power capacity installed per year (%) [9,10].

- *Wind cooperatives:* this entrepreneurial group consists of cooperatives that are owned by individual members. Wind power exploitation is not a means of making money, but a device to use in working for a sustainable society.
- *New independent wind power producers*: this entrepreneurial group consists of companies, commercially interested and specialized in wind power exploitation. Wind power exploitation is a part of their core business, which is most likely, related to the renewable energy sector.

One thing should be said about this distinction, which is based on ownership. During the period 1996–2004, 13.1% of the total capacity that was installed was realized in joint ownership. If a project is realised by a joint venture (JV), the assignment of this project to particular entrepreneurial groups takes place based on proportion of ownership.

Over the years 1996–2001, an average annual increase of more than 40 MW was realized. This evenness in capacity increase ended in the year 2002. This year showed a sharp increase with 166 newly installed turbines and an increase in capacity of 217 MW in 2002, and with 183 newly installed turbines and an increase in capacity of 233 MW in 2003 (Fig. 1). A new market period seemed to have started.

At the beginning of the 1990s, energy distributors dominated the wind power supply market.[5] Comparing energy distributors and small private investors on the basis of the total capacity that was installed in the subsequent period (Figs. 1, 2) one comes to the conclusion that while the contribution of small private producers increased, the role of the electricity sector decreased in importance. The market share of new independent wind power producers fluctuated between 0% in 1998 to a maximum of 39% in 2004, and was on average 14.8%. Over the last 4 years (2001–2004), the market share of new independent power producers increased to 23.8% on average. Market shares in these four years of energy distributors and small private investors were, respectively, 14.7 and 62.3 on average. Bearing in mind that almost 60% of total capacity installed in The Netherlands has been realized in the years 2001–2004, justifies the conclusion that the relative importance of new independent wind power producers increased considerably over the last few years and even surpassed energy distributors. The last category of entrepreneurs outlined—wind cooperatives—has been of minor importance. The market share of wind cooperatives fluctuated between 0% and 4%, with an exceptional peak in the year 2000 when they realized 9% of total capacity installed.

Driven by favorable economic circumstances, the liberalization of the sector and a large consumer demand, wind power implementation showed a strong growth at the start of this century. The new institutional circumstances especially stimulated decentralized private wind power producers. Though small private investors were frontrunners, total capacity realized by new independent wind power producers showed a considerable increase. A relatively large groups of new independent wind power producers emerged at the end of the 1990s (1997–1999), including both one-person companies and large companies like Siemens and Shell. The market share of energy distributors decreased. This can be partly explained by the availability of cheap imports. The liberalized green electricity market combined with the tax exemptions that were also eligible for foreign green electricity created an uneven playing field: domestic wind power had to compete with cheap already written off renewable energy stations all around Europe, like hydroelectric power stations in France. Up to the end of 2002, energy distributors used the tax exemptions mainly for the import of foreign green electricity [7, p. 2056, 2062]. Wind cooperatives remained marginal on the wind power supply market. Though the number of cooperatives almost equaled the number of new independent wind power producers, they seemed to be less well equipped to deal with the new setting of the liberalized market.

4. The electronic board room

An EBR (hardware) with a group support system (GSS) (software) is an interactive, computer-based system that facilitates participants to communicate on unstructured and

[5] As far as the number of turbines and the total capacity installed are concerned, energy distributors dominated the market up to the middle of the 1990s. For an overview of wind power supply market developments in The Netherlands is referred to [7].

semi-structured problems. Dependent on the character and aim of a workshop, communication is directed at problem analysis, brainstorming, decision making or data gathering. A system of linked computers allows participants to provide input anonymously by giving examples and by voting on statements. Advantages of a GSS in an EBR are the anonymity of participants and the possibility of providing input simultaneously. The advantage of anonymity is that ideas will be assessed independent of the particular person that provided the idea. The advantage of providing input simultaneously is that 'speaking time' of each participant is widened. A GSS sees to a comparable contribution of dominant and silent participants [11].

A GSS can contribute to the analysis of complex problems and to consultation between different actors involved in the problem. Both aspects are complementary. Generally speaking, a GSS may positively affect the following aspects of problem analysis [12,13]:

- GSS increases insight in the complexity of a problem: the involvement of different actors can lead to a clustering of information and insights, that together have a surplus value;
- GSS enables testing and evaluating: a group of stakeholders is, compared to individuals, in a better position to assess results or solutions for a problem on the sense of reality;
- GSS increases acceptance: involvement of a variety of interests may broaden the insight in the needs and point of views of different participants; which may contribute to the acceptance of solutions;
- GSS stimulates synergy and creativity; the involvement of different interests in the analysis of a problem can stimulate creativity because participants build on ideas from each other; using insights and knowledge from different angles.

However, using a GSS in a fruitful way requires awareness of the following practical points:

- Though practise shows that participants, irrespective of their experience with computers, are able to work with the system within 20 min, participants need some experience with computers;
- The workshops are very intensive for participants. Sufficient variety in tools and regular breaks are a necessity;
- The workshops may deliver such a large amount of information, that participants risk to lose track of the situation;
- The electronic way of communicating offers limited possibilities for participants to get acquainted with each other and for informal bilateral deliberation.

Broadly speaking, applications of GSS in research can be divided in two categories: GSS as a research object and GSS as a tool for research [14]. In our study we used the GSS to discuss the importance of social and institutional conditions in the operational process of realizing wind power and to vote on statements on the importance of these conditions. We, thus, used the GSS as a tool to study a complex societal phenomenon, i.e. wind power implementation.

5. Workshops to analyze perceptions

We invited 55 entrepreneurs, evenly divided over four different entrepreneurial groups (see Section 3 for a description of those groups). In total 27 entrepreneurs registered for participation.[6] We also invited 57 provincial or local level civil servants.[7] The signs of interest amid civil servants were limited. Only three civil servants had registered for participation after the term of registration went by. Contacting the others by telephone finally led to 12 participants. These telephone conversations provided insight in the considerations about participation (Table 1): 12 civil servants (27%) were prepared to participate, eight (17%) were interested but unable to participate at the particular date of the workshop, 12 civil servants (27%) indicated that they were not prepared to participate because the city council opposes wind power, or because '*wind power is a problematic topic that already takes too much time*'.

The workshops did not form a representative assessment, because the number of participants was necessarily limited. Nevertheless, the participants together have practical knowledge of a large number of wind power planning processes nationwide. The 27 entrepreneurs that participated have been involved in the majority of capacity installed in The Netherlands. We asked the participants to take their own practical experiences in wind power planning as a point of departure in their response on social and institutional conditions in the operational process of realizing wind power. Reviewing this makes it reasonable to assume that the results of the workshops are representative for the experiences and perceptions of wind power entrepreneurs in The Netherlands. We cannot make this assumption for local civil servants. While The Netherlands is divided in 12 provinces and 500 municipalities, only 12 local and regional civil servants participated. By inviting civil servants from municipalities spread over The Netherlands, we tried to overcome the limited possibility to generalize. None of the provinces was over represented. In addition, we sent the results for comment to all civil servants who were interested but unable to participate at the particular date.

Though statistical generalization is not possible, analytical generalization is. The results can be generalized in qualitative terms. They provide information about experiences and perceptions of entrepreneurs and local civil servants with respect to social and institutional conditions in the operational process of realizing wind power and about processes that underlie the relationships between these conditions. It may be argued that similar processes will take place under similar circumstances.

We asked participants to reflect on statements with respect to social and institutional conditions in this operational process. The statements were derived from results of a literature study, from stakeholder's analyses of wind power planning processes[8] and from results of surveys conducted amongst different types of entrepreneurs.[9] We propounded 15

[6]Four representatives of energy distributors, 11 representatives of new independent wind power developers, nine representatives of small private investors and three wind cooperatives.

[7]Twelve provincial wind coordinators and 45 municipal civil servants in the fields of spatial planning, environment and/or energy.

[8]Results of the following two cases were used: 'solitary installations by small private investors in the municipality Zeewolde' and 'large-scale implementation by the energy distributor in the municipality Zeewolde'.

[9]We conducted a survey amongst energy distributors and new independent wind power entrepreneurs, amongst members of the 'Association of Wind Turbine Owners in North-Holland' (Vereniging van Wind turbine eigenaren in Noord Holland) and amongst Dutch wind cooperatives.

Table 1
Considerations about participation of civil servants who were invited for a workshop

Considerations about participation	Provincial civil servants	Local civil servants
Interested/prepared to participate	1 (8%)	11 (24%)
Interested/not at the particular date	2 (17%)	8 (18%)
Wind energy is not a priority/no time available		2 (4%)
Research is not a priority/no time available	4 (33%)	
City council opposes wind power		
Formal		3 (7%)
Informal		7 (16%)
City council is not against wind power, but the topic is problematic and demands to much time already		2 (4%)
Civil servant has left/other job/is ill	2 (17%)	2 (4%)
Problem with the use of a electronic boardroom		1 (2%)
Civil servant cooperated with an other study recently		1 (2%)
Unknown	3 (25%)	8 (18%)
Total	12 (100%)	45 (100%)

statements on institutional conditions and 15 statements on social conditions. As a special category of social conditions we propounded 10 statements on social resistance and the effects of social resistance.

The workshops involved systemic voting procedures on the following aspects:

- whether the participants recognized the statements as being generally applicable,
- whether the participants saw the statements as being recognizable for their own situation as well.

Besides voting, we asked each participant to provide practical examples of situations in which they experienced statements. In this way we aimed to gather a variety of empirical situations, which together would support or refute a statement. We also asked each participant to put the various statements on institutional conditions and social conditions in a ranking order of importance with regard to project realization and market development, thus revealing critical social and institutional conditions (see Appendices B and C).

GSS enabled us to improve and complement 'traditional' methods for data gathering, such as conducting a survey or carrying out interviews. An important advantage of GSS is that results are calculated and presented immediately, which made it possible to reflect with participants on voting results and on the ranking order of importance of social and institutional conditions. For those conditions that were perceived to be most critical for project realization and market development, a brainstorm was carried out on possible solutions. The system enabled us to use both quantitative tools (voting procedures and ranking order) and qualitative tools (providing empirical examples and brainstorm on solutions). In one session, we discussed and voted on statements, we provided feedback on the results and we carried out a brainstorm on solutions for critical social and institutional conditions.

6. Wind power entrepreneurs framing social and institutional conditions

The perceptions of wind power entrepreneurs about the influence of social and institutional conditions in the operational process of realizing wind power projects can be divided in four coherent clusters regarding different aspects of the process. These clusters are derived from qualitative data (practical examples provided by the participants) and quantitative data (voting procedures and ranking order: see Appendix B).

1. The City Council possesses a veto position in spatial planning. Simultaneously, local politics is experienced to be very sensitive for the local popular opinion. Projects reach a deadlock in consequence of the force of not formally recognized arguments in the local political debate. Entrepreneurs cannot bank on the decisiveness of formal standards in decision-making.
2. The quality of permitting is under pressure, due to the complex legal framework and limited administrative capacity. Implementation requires an ambitious local administrative attitude towards wind power.
3. The insecurity of the financial support system leads to uncertainty with regard to the financial viability of projects, but has not been a bottleneck for market development since the end of the 1990s.
4. Some institutional conditions, such as the dominance of fiscal arrangements, are experienced to be discriminating in the market. Simultaneously, all entrepreneurs indicate that these conditions are relatively unimportant for market development.

In the following subsections we will elaborate on these four clusters. We will show that only the 'power position of local authorities and the force of not formally recognized arguments is experienced to be a bottleneck, which frequently leads to failures in implementation: local level politics blocks market development. The other categories of institutional and social conditions slow down but don't block project realization. These conditions make implementation a difficult—but not impossible—undertaking. In the last subsection, we finish with a reflection on the solutions proposed by the entrepreneurs for the most critical social and institutional conditions.

1. The City Council possesses a veto position in spatial planning. Simultaneously, local politics is experienced to be very sensitive for the local popular opinion. Projects reach a deadlock in consequence of the force of not formally recognized arguments in the local political debate. Entrepreneurs cannot bank on the decisiveness of formal standards in decision-making.

It is not advisable to apply for permits if the municipal land use plan (MLUP) does not indicate areas for wind turbines: the permits will be denied because the MLUP is not providing for wind power.[10] If local authorities are not intended to cooperate in adjusting

[10]The MLUP is the only legally binding plan in the whole Dutch planning system. Although, the Spatial Planning Act contains consistency requirements for local and regional land use plans or national planning key decisions (planning hierarchy), the Dutch land use planning system is characterized by 'the absence of the obligation to bring spatial plans in line with the strategic plans (or key decisions) of a 'higher' government'. 'The trick of planning therefore lies in extensive intra-governmental negotiation and consultation' [17, p. 340].

the MLUP, a wind power entrepreneur is empty handed. There are no legal instruments to force municipal authorities to cooperate and they consequently have a veto position in planning. The influence of local politics is large. This institutional embedded power position of local authorities is reflected in the experience of wind power entrepreneurs. They conceive it to be the most critical condition for project realization: a positive attitude and an ambitious attitude of the City Council and the Municipal Executive towards wind energy are necessities for implementation. However, the local political attitude with regard to wind power is perceived to be sensitive for the local popular opinion and not formally recognized arguments in the local political debate are said to be critical for the local political attitude. Entrepreneurial groups conceive these social conditions as critical for the possibility to implement turbines and indicate that these conditions play an important role in almost every project.

Simultaneously, national and provincial governmental communication on the necessity of wind power is perceived to be limited. Too little attention has been paid at improving the local popular opinion. In addition, news coverage on wind power is perceived to be poor: one-sided negative reporting by the press is another critical social bottleneck for wind power implementation. '*News on wind power by the national and local press is often negative. Local civil servants and politicians use this information to make up their mind on wind power issues, without bothering to gain more in-depth knowledge*'.

2. The quality of permitting is under pressure, due to the complex legal framework and limited administrative capacity. Implementation requires an ambitious local administrative attitude towards wind power.

The fragmented character of policies and instruments from different policy fields such as environmental policy, nature conservation policy and the planning system is viewed to be an important cause of delay. Though improved national level conditions in the electricity policy field, i.e. favorable economic conditions since the end of the 1990s, a better bargaining position on the electricity market for private wind power entrepreneurs and a large consumer demand for green electricity, combined with willingness at the side of municipal authorities to cooperate in planning are necessities to start the permitting process, they are, in themselves insufficient for rapid implementation. Before installing a wind power project, permits and exemptions from several authorities on different levels of government must be secured (see Appendices A and B). This requires a sufficient knowledge base at the side of competent authorities to manage the different permitting processes in a consistent way and to assess wind power projects on legally fixed norms on complex matters, such as noise hindrance. Entrepreneurial groups often encounter shortcomings in administrative capacity (a lack of human resources and of knowledge on wind power procedures). The fragmented and complex character of the authorization trajectory in combination with this lack of (local) administrative capacity is conceived to be an important bottleneck for market development.

Also the low threshold for appeal ended up high in the order of ranking in institutional bottlenecks. The authorization trajectory offers the opportunity to make protest for everyone who feels affected with the project against limited costs (EURO 68.07 for appeal against revision or exemption of the municipal land use plan in 2002). Most of the appellants use a wide array of arguments to oppose to wind power projects, such as inefficiency and unreliability of wind turbines, landscape pollution, noise and shadow

hindrance, bird collision, safety risks and the negative effect on neighboring property values. However, the most cited argument that is perceived to be lying at the bottom of opposition is the negative effect on the landscape. Besides these arguments with respect to wind energy or a wind power project, appellants use arguments with respect to the followed procedures to make a stand for their interests: arguments concerning inconsistency in policy or incorrect implementation of legal norms. Projects can be highly delayed by these arguments; especially appeal at the litigation section of the Council of State prolongs the authorization trajectory considerably, with at least a year[11] [15, p. 90]. Consequently, the authorization trajectory needs to be executed highly conscientiously, which is in view of its complex character and the limited local scope and structure of knowledge not an easy job to perform. Though, all entrepreneurs indicate that social resistance is not a broadly supported local phenomenon, but a phenomenon that has its origin in a limited number of active opponents, they also stress that these appellants are an important source of delay. Simultaneously, entrepreneurs confirmed that 'projects do not fail on formal grounds in the procedures'. So, appellants do not stop wind power projects to be implemented, once the formal planning and permitting procedures have started.

All entrepreneurial groups—except energy distributors—assign importance to delays in permitting procedures. The burden of proof with regard to arguments raised by opponents rests on the competent authority or the wind power entrepreneur, which increases pre-investment costs. A potential explanation for the deviating opinion of energy distributors is that these companies are relatively wealthy, able to bear high-pre investment costs and to hold out long lead times.

3. Insecurity of the financial support system leads to insecurity with regard to the financial viability of projects, but has not been a bottleneck for market development since the end of the 1990s.

Frequent adaptations of the financial support system lead to uncertainty with regard to the financial viability of projects, which make entrepreneurs reluctant to invest. The Dutch financial support system is notorious for its complex and unstable character. Insecure economic financial support ended up third in order of ranking in institutional bottlenecks. At the same time, however, entrepreneurial groups made clear that economic profitability has not been a bottleneck for market development since 1997/1998. Changes in fiscal arrangements and subsidy regimes led to disturbance and delay in project realization, but did not stop the market to evolve.

To adapt to changes in financial regulations and to make full use of financial possibilities, entrepreneurs need a sufficient knowledge base. Changing financial support systems in a liberalizing market, which is characterized by increased competition, ask for professional types of entrepreneurs. If we compare the four entrepreneurial groups on their opinion on this theme, then we notice that small private investors and new independent wind power entrepreneurs assign less importance to insecurity of the financial support system, compared to wind cooperatives and energy distributors. Wind cooperatives are

[11] The formal trajectory for a large-scale wind power project of more than 15 MW in the neighborhood of a Nature Reserve consists of at least six different procedures, and provides for formal deliberation at eight different moments. In addition, judicial appeal at the Litigation Section is possible at another seven moments.

due to their voluntary character less well equipped to deal with changing financial circumstances in a liberalized market. The position of energy distributors is more surprising. Wind power exploitation is a small business component in these companies. Their core business is producing and selling a portfolio of electricity sources and wind power generation needs to compete with profit margins on these other sources. This might explain their deviating position. Whereas, wind power generation is core business for new wind power producers and an additional income for small private investors, energy distributors seem to switch to other more profitable options or import when profits threaten to fall.

4. Some institutional conditions are experienced to be discriminating conditions in the market. Simultaneously, all entrepreneurs indicate that these conditions are relatively unimportant for market development.

We provided three statements that consider potential discriminating effects of institutional conditions. These statements relate to, first discriminating effects of demands in provincial spatial policy, such as the requirement to install wind turbines in large clusters in a restricted number of industrial areas. This spatial requirement leads to a limited number of large-scale wind projects with high (pre)-investment costs, favoring large wealthy investors. The second statement relates to the dominance of fiscal arrangements in the financial incentive system, which favors entrepreneurs with high profit margins above entrepreneurs with lower profit margins. And the third statements relates to the limited possibilities for decentralized producers in an oligopolistic market with a limited number of electricity suppliers. If we compare the entrepreneurial groups on their perceptions with regard to these conditions then we notice that experiences strongly diverge. The number of participants that strongly confirmed these statements equaled the number of participants that strongly refuted these statements. Two frames can be distinguished from the practical examples provided by the participants:

(1) Liberalization of the market, scale enlargement and increased competition requires a professional and market driven approach. These developments lead to increased technical and financial risks. Controlling those risks is hardly possible for small-scale private investors. Moreover, the fiscal incentive system additionally strengthens the tendency to wealthy professional types of entrepreneurs. They profit more from these schemes. Consequently, commercial new independent wind power producers and energy distributors will dominate the Dutch market.
(2) Small private investors increasingly manage to strengthen their position on the liberalizing market. Liberalization for instance enabled them to establish Windunie. Windunie is a co-operative that represents the owners of approximately 300 MW of wind power, including some small-scale community and small private investors, as well as some new independent wind power producers (the biggest company owner has 45 MW of wind generation). Windunie aims to jointly sell their green electricity on the market, and negotiates prices for the basic buyback rates with three dominant energy companies in The Netherlands. Though small private investors are put at a disadvantage by spatial requirements in some provinces and by the fiscal incentive system, they are able to seize the opportunities provided by the liberalized market and they adapt to requirements set by increased competition.

Moreover, most small private investors have a land location, something that energy distributors lack.

We notice that all entrepreneurs experience these conditions as relatively unimportant for market development. Energy distributors and new independent wind power producers assign no importance at all to these discriminating conditions. Small private producers and wind cooperatives assign some importance to discriminating effects of fiscal arrangements and demands in provincial spatial policy.

5. Solutions for critical social and institutional conditions.

The various solutions for critical social and institutional conditions as proposed by entrepreneurs are not mutually exclusive. We clustered the solutions with respect to the content and kept the order of ranking of the entrepreneurs:

1. Creating a municipal interest in wind power by financially compensating municipalities;
2. Limitation of possibilities of appeal and reducing the complexity of the formal authorization trajectory;
3. Abolishing investment and production subsidies; replacing these subsidies with a obligation for suppliers to buy renewable electricity against a sufficient prices per kWh (feed-inn tariff);
4. Improvement of cooperation within the wind sector to better refute the arguments of opponents; and to increase positive PR;
5. Implementation of sanctions for administrative authorities for failing to realize wind power targets;
6. More information for (local) governments and politicians;
7. Community involvement in planning processes.

Entrepreneurs see the necessity of creating a municipal interest in wind power. By creating such an interest, they hope to secure the required local political support. The entrepreneurs propose to financially compensate municipalities for each kWh produced by wind energy. Who should pay for this compensation is a question that has been left aside.

Entrepreneurs stress the importance of limiting the possibilities of appeal and reducing the complexity of the formal authorization trajectory. Both are procedural solutions, which aim at formal procedural bottlenecks in project realization. In Dutch planning processes and environmental permitting procedures, access to official procedural stages is open for all. Entrepreneurs propose to end this 'actio popularis' in Dutch law. To be granted access in the procedures one should show a direct interest. In addition, they propose to integrate permits and moments for appeal in one single procedure and to transfer the burden of proof to the appellant. These procedural solutions get a high ranking. They reach a higher score than more strategic solutions, such as increased information for local governments and politicians and community involvement in planning processes. These latter solutions focus on creating social and political support by improved communication.

Remarkably, all entrepreneurs plea for abolishment of investment and production subsidies, and replacement of these subsidies by an obligation for suppliers to buy wind

power against guaranteed price levels. In this manner entrepreneurs are no longer dependent on the changing governmental financial incentive schemes.

7. Local government authorities framing social and institutional conditions

The perceptions of local civil servants about the influence of social and institutional conditions in the operational process of realizing wind power projects can be divided in four coherent clusters regarding different aspects of the process. These clusters are derived from qualitative data (practical examples provided by the participants) and quantitative data (voting procedures and ranking order: see Appendix C).

1. The quality of planning and permitting is under pressure, due to the complex legal framework and limited administrative capacity. Implementation requires an ambitious local administrative attitude towards wind power.
2. The local political attitude towards wind power is vulnerable to the local popular opinion. Consequently, the phase of informal pre-deliberation on the possibility of wind power, i.e. the local political decision making process, is critical for projects to succeed. Local entrepreneurs seem to have a somewhat better change to successfully pass this phase.
3. The administrative agreement BLOW, which was introduced by the national government in 2001, is a praiseworthy communicative instrument for attempting to eliminate political and administrative bottlenecks for wind power implementation; it however does not solve local planning problems and possibilities for wind power entrepreneurs.
4. Nationally induced spatial planning requirements add new problems to implementation and sometimes unnecessarily block market development. Height restrictions lead for instance to the inefficient use of a location.

In the following subsections we will elaborate on these categories of social and institutional conditions. In the last subsection, we finish with a reflection on solutions proposed by the civil servants for the most critical social and institutional conditions.

1. The quality of planning and permitting is under pressure, due to the complex legal framework and limited administrative capacity. Implementation requires an ambitious local administrative attitude towards wind power.

The fragmented character of policies and instruments from different policy fields and the involvement in the permitting process of different authorities on different levels of government are conceived to be critical conditions for wind power market development. Changing legislation, lack in intergovernmental coordination and incorrect implementation of policies, cause social and administrative resistance and corresponding delays. Opponents (both civic and administrative) use arguments concerning inconsistencies in the authorization trajectory, such as inconsistencies in spatial planning on provincial and municipal level or incorrect implementation of EU legislation. A local civil servant: '*It is not clear to us how far different policies, such as the EU Habitats Directive, influence the planning of wind turbines in our municipality*', and '*It is impossible to run faultless through the authorization trajectory, especially because different authorities and sections are involved.*

Opponents seize every opportunity provided by the legal system to make a stand for their interest. The burden of proof rests with the competent authority or the entrepreneur. This is, in view of the limited scope and structure of knowledge, a difficult institutional construct.' Though all civil servants stress that overlap in, and complexity of, procedures lead to delays in implementation and hamper market development; they did not recognize it for their own situation. This is remarkable: lack in (local) administrative capacity to manage the authorization trajectory properly is acknowledged as problem in general, but not for the own municipality.

2. The local political attitude towards wind power is vulnerable for the local popular opinion. Consequently, the phase of informal pre-deliberation on the possibility of wind power, i.e. the local political decision making process, is critical for projects to succeed. Local entrepreneurs seem to have a somewhat better change to successfully pass this phase.

Local civil servants hold the view that the chance for project realization increases considerably when the City Council and the Municipal Executives are ambitious towards wind power implementation. In that case, projects may be delayed, but they do not reach a deadlock on formal grounds in the procedures. Simultaneously, civil servants stress that the required local political ambition depends on the local popular opinion and that not formally recognized arguments play an important role in the local political debate on wind power. '*Wind turbines always evoke strong emotions. These emotions set the tone in hearings on wind power*'. In view of the required local political support for spatial planning, the conclusion seems justified that the phase of informal local political debate on the necessity and possibility of a wind power project is most critical for the project to succeed. '*Ambitions towards wind power implementation disappear quickly if the City Council gets confronted with fierce social resistance. This holds especially when council elections are on the way*'.

According to the participating local civil servants, projects of local entrepreneurs may depend on more administrative and local political support than projects of 'foreign' entrepreneurs. Participants recognized this view both as being general applicable and for their own situation. If we consider this in coherence with the importance of the phase of informal pre deliberation in spatial planning, we can carefully conclude that projects in which local entrepreneurs are involved, have a better change to successfully pass the local political phase, than projects initiated by 'foreign' entrepreneurs. A local civil servant: '*Local entrepreneurs (farmers) initiate wind power projects in our municipality. Those entrepreneurs are the grassroots support of the main local political parties. These local political parties support the initiatives in the City Council*'.

3. The administrative agreement BLOW, which was introduced by the national government in 2001, is a praiseworthy communicative instrument for attempting to eliminate political and administrative bottlenecks for wind power implementation; it however does not improve local planning problems and possibilities for wind power entrepreneurs.

In 2001, a wind power administrative agreement known as 'Governmental Agreement on the National Development of Wind Energy' or BLOW (Bestuursovereenkomst Landelijke

Ontwikkeling Windenergie) was introduced. It incorporates six ministries of the national government, all of the twelve Dutch provinces and the association of Dutch local authorities. The aim of this covenant is 1500 MW of capacity onshore in 2010. Under this administrative agreement each province has a target to designate locations for wind turbines. Central to BLOW is that all government parties together should realize these provincial targets, taking the relative balance and powers into consideration. In the framework of BLOW, provinces developed steering strategies to guide municipalities in wind power implementation.[12] If by the year 2005 municipalities do not intend to cooperate, the provinces have the right to dictate areas for wind energy in any municipality [16].

The civil servants unanimously value the existence of BLOW: the statement regarding BLOW ended up third in order of ranking in institutional conditions. Simultaneously, they indicated that BLOW has not improved possibilities for wind power entrepreneurs. Though the instrument increases administrative élan, it does not solve local level planning problems. '*BLOW is a praiseworthy instrument, but reality is stubborn. Municipalities don't feel obliged to BLOW: they see the target as a central governmental and provincial problem. Moreover, BLOW doesn't solve local level problems such as social resistance*'. Most civil servants hold the view that national policies on wind energy, which often refer to global climate change to justify targets and instruments, pass over regional and local level planning praxis. Local level planning praxis is characterized by local resistance against wind power arising from local interests, such as the local landscape. BLOW is a nationally induced administrative agreement that stimulates communication between provincial and municipal authorities on wind power implementation. It aims for increased local administrative support, which however, seems to be determined more by the local popular opinion.

4. Nationally induced spatial planning requirements add new problems to implementation and sometimes unnecessarily block market development. Height restrictions lead for instance to the inefficient use of a location.

The Fifth National Policy Document on Spatial Planning (Vijfde Nota Ruimtelijke Ordening) (2001) gives instructions on wind energy sites. Wind turbines should be concentrated on lines and clusters, if possible they should be build in business parks or close to highways, railways and canals. Solitary installation and placement in open landscape is not allowed any longer, unless the turbines can blend well into the landscape. Most provinces have adopted the demand for clustering in their regional land use plans and also at the local level a continued effect can be seen.[13] This demand for clustering is perceived as a complicating factor in project development. Projects get more complex because more landowners and municipalities are involved. Also the demand to build turbines in business parks or close to highways adds new problems to implementation. On these locations, more functions and people are present near the turbines, which ask for new

[12]Provinces use different steering strategies to guide municipalities: top down, interactive and bottom up strategies [16].

[13]The MLUP is the only legally binding plan in the whole Dutch planning system. Although, the Spatial Planning Act contains consistency requirements for local and regional land use plans (planning hierarchy), the Dutch land use planning system is characterized by 'the absence of the obligation to bring spatial plans in line with the strategic plans (or key decisions) of a 'higher' government' [17, p. 340].

types of risks assessments and standards. Besides the nationally induced demand for clustering turbines at certain appropriate areas, height restrictions are inserted in almost every regional and municipal land use plan. According to local civil servants, these height restrictions lead to inefficient use of locations and they unnecessarily slow down market development. '*The difference between a turbine with a mast height of 70 m or a mast height of 100 m is hardly visible. Whenever the question about the appropriateness of wind power within a municipality is answered positively; no further height restrictions should be imposed*'.

5. Solutions for critical social and institutional conditions.

The solutions as proposed by the participating civil servants are not mutually exclusive. We clustered the solutions with respect to the content and kept the order of ranking on feasibility and desirability of the civil servants:

1. More (public) information for citizens and governments.
2. Measurable quality requirements in spatial planning; and a more explicit testing framework.
3. A bottom-up approach in planning: community involvement in planning.
4. Limitation of possibilities to appeal against a project and reducing the complexity of the formal authorization trajectory.
5. Top down planning by higher governments.

The importance of providing more and better (public) information is emphasized. Providing information is considered to be highly feasible and desirable. In addition, participants mention the importance of using a bottom up approach in planning. Though they stress the importance of community involvement, it is not considered to be very practicable within the complex local political praxis. The aim of bottom up planning is increased social support. However, social resistance hampers the political support that is required to start such planning processes. In addition, these processes take time and entrepreneurs want to fasten planning.

Limitations of possibilities to appeal, reducing the complexity of the formal authorization trajectory and a top down planning approach are also mentioned as solutions. However, the feasibility of these procedural solutions is considered to be limited: these solutions do not prevent social resistance.

Finally, all participating civil servants mentioned the option of switching to offshore wind energy to spare onshore locations. Though this option is considered to be highly desirable, they are very skeptical about the feasibility of offshore wind power in the short run.

8. Comparing wind power entrepreneurs and local civil servants

Though entrepreneurs and local civil servants stress different aspects of the operational process of realizing wind power, their perceptions about social and institutional conditions are largely identical. However, with regard to the proposed solutions both groups differ in their approach.

Both groups stress the importance of the institutionally embedded power position of local politicians and the sensitiveness of the local political debate for the popular opinion and not formally recognized arguments. Social resistance is not a broadly supported local phenomenon, but has its origin in a limited number of active opponents, which are able to dominate the local political debate. The phase of informal deliberation, on the question whether or not the municipal land use plan should be adjusted for wind power, is the most critical phase in project development. Entrepreneurs cannot bank on the decisiveness of formal standards in this phase; the local popular opinion is decisive. Entrepreneurs furthermore hold the view that too little attention has been paid by the national government at improving this opinion. Local entrepreneurs seem to have a somewhat better chance to successfully pass this phase, at least according to the experiences of the local civil servants.

A second aspect is the complex legal framework and the shortcoming in administrative capacity to manage the authorization trajectory properly. Appellants use a broad array of arguments, amongst them arguments concerning inconsistency in policy or incorrect implementation of legal norms. Judicial appeal based on these arguments strongly delays project realization. Consequently, the authorization trajectory needs to be executed highly conscientiously, which is a difficult job to perform in view of the limited administrative capacity. Implementation therefore requires an ambitious local administrative and political attitude, which is sensitive for the local popular opinion that in turn is dominated by a limited number of opponents. Both, entrepreneurs and civil servants stress that appeals in the permitting procedures strongly delay projects, but do not lead to deadlocks in implementation: the permitting phase is a less critical phase than the phase of informal deliberation on spatial planning.

Entrepreneurs stress conditions that relate to the financial feasibility of projects. They indicate that changes in fiscal arrangements and subsidy schemes lead to disturbance and delay in project realization. These changes however did not stop market development. A side effect of changing financial conditions is increased professionalism in the market: entrepreneurs need a sufficient knowledge base to be able to adapt to changing conditions.

Conditions that relate to the financial feasibility of projects are outside the competences of local civil servants. Consequently, they focus on different conditions, such as national level governmental steering strategies that do affect their tasks and competences. The administrative agreement BLOW is a nationally induced instrument, which according to civil servants passes over a crucial aspect of the local planning problem. BLOW aims for local administrative and political support by increased communication between provincial and municipal authorities. However, local political support is determined more by the local popular opinion. Civil servants also mentioned problems that result from new nationally induced spatial planning requirements, such as clustering the turbines on certain appropriate areas, which make the planning process (both procedural and socially) more complex.

With regard to the proposed solutions, both groups differ in their approach. In general terms, two types of solutions can be distinguished. The first types of solutions are procedural solutions, such as limiting the possibilities to appeal, reducing the complexity of the formal authorization trajectory and using a top down planning approach. These solutions aim at formal procedural bottlenecks. The second types of solutions are strategic solutions, such as providing more information on the necessity of wind power for local

governments, politicians and citizens, and community involvement in planning processes. Though both groups explicitly mention both types of solutions, entrepreneurs stress procedural solutions above strategic solutions and civil servants stress strategic solutions above procedural solutions.

Entrepreneurs hope to secure the required political support by creating a financial interest for municipalities. In addition, they propose to integrate permits and moments for appeal and to transfer the burden of proof to appellants. These procedural solutions are tangible. If these solutions become implemented, they become part of the formal institutional framework. This means that entrepreneurs can bank on them formally. Moreover, the primary aim of these solutions is fastening of planning and permitting procedures.

Civil servants consider the feasibility of procedural solutions to be limited because these solutions do not prevent social resistance. Social resistance is perceived to be lying at the bottom of procedural problems. They stress the necessity of providing more and better information and community involvement in planning processes for creating the required local social and political support. At the same time they acknowledge that strategic solutions take time and that results are insecure within the complex local political process.

9. Reflection on the main findings

The subsequent steps that need to be taken to bring a wind power project on line are not only determined by national level electricity policies, but also by policies and instruments in other fields, such as land use policy, environmental policy and nature conservation policy. Electricity policies, developed to stimulate wind power mainly focus at reducing the differences between generation costs for wind power and fossil fuel based electricity, thus stimulating wind power investments. Actual implementation however takes place within the whole of restrictions set by other policy fields. These policy fields aim at securing qualities that are not secured by the free market, such as scenic qualities, wild life values and noise levels. These policies converge on the operational level of implementation and constitute the institutional framework in which wind power entrepreneurs and other stakeholders involved operate. Procedural and societal problems exist at this operational level of wind power implementation.

Reducing procedural and administrative bottlenecks in the operational process of implementation has been mentioned as an important aspect of wind power policy support in various national memorials and letters to the Chamber of Deputies. The first Energy Report (1999) explicitly mentioned that preference should be given to streamlining planning and permitting procedures. The second Energy Report (2002) concluded that the development of wind power was lagging behind the governmental target. Main problems identified were problems with spatial planning and an insecure investment climate. However, following the results of the workshops, the absence of a stable investment climate has led to disturbance and delay in project realization, but economic profitability has not been a problem for market development since 1998. In other words, financial schemes that were available to make onshore wind power projects attractive to market parties have not blocked market development. Problems with spatial planning, on the contrary, have. Some steering strategies have been developed at the national level to solve these planning problems. However, on the basis of our research

findings one might doubt if these incentives are strong enough and address the right problems.

First of all, the national government has introduced the administrative agreement BLOW in 2001, with the aim to ensure the installation of 1500 MW of wind power capacity in 2010. This nationally induced instrument stimulates communication between provincial and municipal authorities in wind power. Aiming at improved communication between provincial and municipal authorities, BLOW does not address social resistance, which seems to underlie the required local administrative or political support. Second, in 2002, the state secretary of Economic Affairs set up an interdepartmental taskforce 'Bottlenecks for gas extraction and wind energy'.[14] This taskforce was charged to draw up an inventory of the formal rules and procedures applicable to wind power projects. The aim of the inventory was to offer proposals to lessen the authorization trajectory by half. Most of the recommendations of the taskforce were in line with the solutions proposed by wind power entrepreneurs; they aim at reducing procedural bottlenecks related to the formal institutional framework. Though addressing institutional bottlenecks is important, procedural solutions pass over more fundamental problems situated in the setting of social conditions. In a certain sense, the formal institutional framework (formal rules, procedures and instruments) is neutral. Social conditions put meaning into this institutional framework. Exactly these social conditions, such as social resistance or a negative popular opinion on wind power are experienced to be highly problematic.

Most national policies on wind energy refer to global climate change to justify targets and instruments. Many opposition groups question the contribution of wind power to the reduction of climate change.[15] Public communication on this point has been limited. Consequently, the necessity and importance of wind power in relation to costs on the local level are insufficiently clear.[16] Too little attention has been paid at clarifying the cost-benefit discussions on the local level and at improving the local popular and administrative opinion, which are, paradoxically, the main solutions for reducing procedural bottlenecks. Local civil servants seem to acknowledge this paradox. They consider the feasibility of procedural solutions to be limited and stress the necessity of strategic solutions, such as providing more public information on the necessity of wind power and community involvement in planning. However, these strategic solutions take time and they are perceived to give less security for investors since they are no part of the formal institutional framework. Unfortunately, time is limited resource in a liberalized setting and investors prefer institutionalized securities.

[14]This taskforce was set up within the framework of the national B-4 project: Beter Bestuur voor Burger en Bedrijf 'Better Government for Citizens and Companies'. The aim of this project is to reduce the burden of rules and procedures for the corporate sector and to increase the quality of government performance for citizens and companies.

[15]One of the most important opposition groups at the national level is the national critical platform of wind energy (NCPF). More than 50 local opposition groups are represented in this organization. It effectively feeds local social resistance and provides procedural and judicial information on how to delay or block wind power projects. This ever-better organized social opposition makes wind energy a sensitive local political dossier.

[16]Currently, The Netherlands Bureau for Economic Policy Analysis (CPB) and the Energy Research Centre of The Netherlands (ECN) carry out a societal costs and benefits analysis for different renewable electricity options by order of the Ministry of Economic Affairs.

9.1. Use of the electronic board room

A group support system (GSS) in an EBR can be used in two different ways in policy analysis. It can be used to explore complex problems to identify those aspects that require attention in further research. It can also be used for testing and evaluating results. The advantage of bringing a group of stakeholders together in an EBR is that they together possess practical knowledge and insights from different angles. Interaction between those stakeholders, the sharing of knowledge and points of views, gives a good base for testing results on the sense of reality. In an EBR it is the researcher who creates the framework for reflection (statements), thus steering the results. Consequently, the framework must be carefully constructed, based on insights into the policy field under scrutiny. Moreover, the framework must be flexible: participants should be given the opportunity to add statements of their own. Use of the EBR proved to be fruitful in our study of the operational process of realizing wind power implementation. It enabled us to test insights derived from earlier studies (literature study, stakeholders' analyses and surveys), thus increasing the robustness of the results of those studies. The workshops delivered a large amount of data, giving a good base for analytical generalization.

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Appendix A

Procedures applicable to wind turbines onshore in The Netherlands are given in Tables A.1 and A.2.

Table A.1
Procedures applicable to wind turbines onshore in The Netherlands

1. Spatial planning—municipal land use plan (MLUP)
The MLUP needs to be in line with the regional land use plan (RLUP) and regulates the exact location, the number of turbines, the maximum height including rotor blades and the ratio of mast height and rotor diameter. If a project does not fit in the MLUP, exemption or revision of that plan is required.

2. Environmental impact assessment (EIA)
Up to 1999, an EIA was required for projects >20 MW or >20 turbines.
Since 1999, projects >10 MW or 10 turbines must be examined by the competent authorities to establish whether an EIA is required.
Since 2004, projects >15 MW must be examined by the competent authorities to establish whether an EIA is required.

3. Construction permit (CP)
The Housing Act requires a CP for wind turbine, which may only and must be refused whenever the project deviates from conditions in the MLUP, the buildings decree and the building code.
The judgment on the CP is deferred until the moment that the environmental permit (EP) is allocated.

4a. Environmental permit (EP)
Up to 2001, the Environmental Management Act required an EP for projects with a rotor diameter >2 m and/or >4 kW.
Since 2001, an EP is required for projects >15 MW.
An application has to be accompanied by data on legally fixed environmental and nuisance aspects, such as noise, blade shadow on dwellings, and hindrance for birds and safety aspects. In addition, copies of the application for a building permit (if applied for) and technical data on the wind turbines are required.
The EP becomes effective only after positive judgment on the Construction Permit.

4b. Provisions and installations environmental management decree (PIEMD)
Since 2001, projects <15 MW with an attitude to the nearest dwelling of at least 4 times the mast height do not need an EP any more. Registration of such projects at the municipal administrative office is sufficient. This registration must be accompanied by an acoustic report, and the project must comply with legally fixed norms on safety, blade shadow on dwellings, trembling and glittering. Municipal authorities are allowed to formulate additional requirements in the benefit of the environment.

5. Nature conservation permit (NCP)
The Nature Conservation Act requires a NCP for damaging actions within or in the direct neighborhood of Nature Reserves.

6. Dispensation according the law on the protection of wild fauna (LWF)
Since 2002, this law requires a dispensation to disturb species, regardless the specific area where they live.
The LWF provides with a Dutch translation of the species conservation component of the EU habitats and bird directives with regard to all areas that are designated as special protection zones.

7. The EU birds directive (79/409/EEC) and the EU habitats directive (92/43/EEC)
Because Art. 6 of the habitats directives has not been translated properly into national legislation,[a] spatial developments can be tested for compliance directly against the directives. Implementation of wind turbines within protection areas according to the directives is not allowed, and the installation of turbines in the direct neighborhood of these areas, must be tested against Art. 6 of habitats directive. The situation is unclear with regard to the decisions that have to be tested: for instance at the level of a RLUP or at the level of a CP.

[a]In May 1998, the European Court sentenced the Netherlands for this failure. Until 1997, little attention has been paid to the implementation of both directives. Though it was not conform the EU legal framework, observance was possible through the NCL or through the MLUP. Observance through the application of the NCL with corresponding permit prevail [18].

Table A.2
Procedures applicable to wind turbines onshore in The Netherlands

Procedure (Abbreviations see Table 1)	Competent authority	Authorization period	Administrative participation or appeal	Access to procedural stages	Judicial appeal and period
1a. MLUP revision	*Determination* Municipal Council *Approval* Provincial Executives	~60 weeks	1 × Municipal Council 1 × Provincial Executives	Open to all[a]	1 × Litigation section of the Council of State 52 weeks
1b. MLUP exemption	*Determination* Municipal Council *Declaration of no objection* Provincial Executives Municipal Executives	~32 weeks	1 × Municipal Council	Interested parties	–
2. EIA	Municipal Council/	~48 weeks	2 × at competent authority	Open to all	–
3. CP	Municipal Executives	~12 weeks	1 Municipal Executives	Interested parties	1 × District Court 1 × Litigation section of the Council of State Period: undefined
4a. EP	Municipal Executives	~26 weeks	1 × Municipal Executives	Open to all	1 × Litigation section of the Council of State 52 weeks
4b. PIEMD		–	–	–	–
5. NCP	*Determination* *Minister of Agriculture, Nature Conservation and Fisheries* *Assessment by* Municipal Executives Provincial Executives	~3 to 9 months	1 × Minister of Agriculture, Nature Conservation and Fisheries	Interested parties	1 × Litigation section of the Council of State 52 weeks

Table A.2 (*continued*)

Procedure (Abbreviations see Table 1)	Competent authority	Authorization period	Administrative participation or appeal	Access to procedural stages	Judicial appeal and period
6. LWF	Minister of Agriculture, Nature Conservation and Fisheries	Reasonable period ~8 weeks according to the General Administrative Law Act	1 × Minister of Agriculture, Nature Conservation and Fisheries	Interested parties	1 × District Court 1 × Litigation section of the Council of State Period: undefined

[a] In the SPA and the Environmental Management Act, the so-called 'staged actio-popularis' has a long standing tradition, which means that access to official procedural stages is open for all. No interest has to be shown. The term 'interested party' in the General Administrative Law Act requires a party to have an interest, however this term needs to be conceived in a broad sense [19].

Appendix B

Familiarity and relative importance of institutional conditions are given in Table B.1.

Table B.1
Familiarity and relative importance of institutional conditions

Wind power entrepreneurs			Local civil servants		
Conditions	(%)	Fam.	Conditions	(%)	Fam.
Institutionally embedded power position of local authorities in planning	27.0	+ +	Fragmented character of policies and instruments from different policy fields and different governmental levels	16.11	+ +
Fragmented character of policies and instruments from different policy fields and different governmental levels	17.6	+ +	Institutionally embedded power position of local authorities in planning	11.67	+ +
Changes in the financial support system—insecure investment climate	14.3	+ +	BLOW: adds to administrative élan; does not create new possibilities for wind power entrepreneurs	10.67	+ +
Height restrictions: inefficient use of locations	9.4	+ +	Overlap in, and complexity of, procedures and regulation lead to administrative errors	9.78	–
Nationally induced demand for clustering the turbines: involvement of more landowners in project realization	6.6	+	Height restrictions: inefficient use of locations	9.22	+ +
BLOW: adds to administrative élan; does not create new possibilities for wind power entrepreneurs	5.2	+/–	New nationally induced requirements from different policy domains add new problems to implementation	7.67	+
Recommendation to locate wind turbines on business parks	4.5	+	Nationally induced recommendation to build turbines on business parks	7.56	+/–
Implementation of dualism on the local administrative level	5.0	+/–	Entrepreneurs make sure that projects remain beneath the 15 MW level in the PIEMD	7.00	+
Discriminating effects of fiscal support system	2.7		Local authorities are guided by expertise and information provided by wind power entrepreneurs	6.89	+/–
Demands in provincial planning policy lead to discriminating effects in the market	3.1	+/–	Nationally induced demand for clustering the turbines: involvement of more landowners in project realization	6.78	+
Implementation of provisions and installations environmental management decree (PIEMD)	3.0	+/–	Demands in provincial planning policy lead to discriminating effects in the market	3.22	–
	1.5	+/–	Implementation of dualism on the local administrative level	2.11	–
	100		The quick scan wind energy provides a surplus of locations	1.33	– –

Table B.1 (*continued*)

Wind power entrepreneurs			Local civil servants		
Conditions	(%)	Fam.	Conditions	(%)	Fam.
Workshop 26 April				100	
The quick scan wind energy provides a surplus of locations	1.0	+/−	% = Each participant received 100 points, to be divided amongst the statements on institutional conditions		
Workshops 12 May					
Entrepreneurs make sure that projects remain beneath the 15 MW level in the PIEMD	4.5	+/−	Participants of the workshop on 12 May used the opportunity to add a statement on institutional conditions. This statement has been taken along in the ranking order of importance of institutional conditions. Relatively, participants attached great value to this statement. In addition, some statements are taken along only in one of the two workshops for entrepreneurs. To keep the results of workshops comparable we corrected for the points allocated to these statements [20, p. 38]		
The formal regulation of tariffs and terms for grid connection removes an important barrier for market development	1.4	+			
Statement added by participants of the workshop on 12 May					
Low thresholds for appeal	21.8	++			

Fam. = Familiarity; ++: Strongly corroborated; +: Mostly corroborated; +/−: Diverging experiences; −: Mostly refuted; −−: Strongly refuted.

Appendix C

Familiarity and relative importance of social conditions are given in Table C.1.

Table C.1
Familiarity and relative importance of social conditions

Wind power entrepreneurs			Local civil servants		
Conditions	(%)	Fam.	Conditions	(%)	Fam.
The local political attitude is sensitive for the local popular opinion with regard to wind power	20.7	+ +	Projects get highly delayed by appellants; but do not fail on formal arguments in the permitting procedures	23.7	+ +
Projects reach a deadlock on not formally recognized arguments in the local political debate	18.9	+ +	The local political attitude is sensitive for the local popular opinion with regard to wind power	17.0	+ +
Projects get highly delayed by appellants; but do not fail on formal arguments in the permitting procedures	12.0	+ +	Projects reach a deadlock on not formally recognized arguments in the local political debate	15.6	+
Insufficient public communication on the necessity of wind power	11.7	+	Local entrepreneurs may depend on more administrative support, than ‘foreign’ entrepreneurs	8.4	+
Lack of scope and structure of knowledge with regard to wind power: limited administrative capacity	10.4	+ +	Lack of scope and structure of knowledge with regard to wind power: limited administrative capacity	7.6	+/–
The trade organization for wind power is badly organized	10.0		Insufficient public communication on the necessity of wind power	6.4	+ +
Financial advantage for municipalities leads to administrative support on the local level	5.5	+/–	National policies on wind energy pass over local level planning praxis	6.4	+
Local entrepreneurs may depend on more administrative support, than ‘foreign’ entrepreneurs	3.8	+	Municipalities are forced to act as a mediator between competing wind power entrepreneurs	5.4	–
Collaboration between landowners and wind power entrepreneurs is a delaying condition in project development	2.7	+/–	Financial advantage for municipalities leads to administrative support on the local level	3.6	+
Insufficient performance of the Dte (Office of Energy Regulation)	2.6	+/–	Collaboration between landowners and wind power entrepreneurs is a delaying condition in project development	3.2	+/–
Rapid emergence of new market parties has been harmful to the local social and administrative support	1.8	– –	Rapid emergence of new market parties has been harmful to the local social and administrative support	1.6	– –

Table C.1 (*continued*)

Wind power entrepreneurs			Local civil servants		
Conditions	(%)	Fam.	Conditions	(%)	Fam.
	100		Local administrative support declines due to high administrative costs for procedures	1.1	−−
Workshop 26 April				100	
The 'right person at the right time on the right place' at the local governmental level determines the chance for success	11.1	++	% = Each participant received 100 points, to be divided amongst the statements on social conditions		
New nationally induced requirements from different policy domains add new problems to implementation	3.1	+	Participants of the workshop on 12 May used the opportunity to add statements on social conditions. These statements have been taken along in the ranking order of importance of social conditions. In addition, some statements are taken along only in one of the two workshops for entrepreneurs. To keep the results of workshops comparable we corrected for the points allocated to these statements [see 20, p. 41]		
Municipalities are forced to act as a mediator between competing wind power entrepreneurs	1.0	−−			
Workshop 12 May					
Joining local and regional economic interests increases the chance for success in project realization	5.3	+/−			
Local authorities are guided by expertise and information provided by wind power entrepreneurs	3.5	+			
Competition amongst wind power entrepreneurs leads to high kWh costs	3.1	−−			
Statement added by participants of the workshop on 12 May					
One-sided negative reporting by the press	10.9	+			
Using the argument of 'negative effects on neighboring property value' by opponents	10.3	+			

Fam. = Familiarity; ++: Strongly corroborated; +: Mostly corroborated; +/−: Diverging experiences; −: Mostly refuted; −−: Strongly refuted.

References

[1] International Energy Agency. Renewables information. The Netherlands: International Energy Agency; 2004 [chapter 15].
[2] Ministry of Economic Affairs, Ministry of Spatial Planning Housing and the Environment. Knelpunten en oplossingsrichtingen "gaswinning en windenergie". Interdepartmental Workgroup, The Hague; 2004.
[3] Junginger M, Agterbosch S, Faaij A, Turkenburg W. Renewable electricity in The Netherlands. Energy Policy 2004;32:1053–73.
[4] Vermeend W, Van der Vaart J. Greening taxes: the Dutch model; ten years of experience and the remaining challenge. Deventer: Kluwer; 1998.
[5] Dinica V. Sustained diffusion of renewable energy. Politically defined investment contexts for the diffusion of renewable electricity technologies in Spain, The Netherlands, and the United Kingdom. Enschede: Centre for Clean Technology and Environmental Policy CSTM, Twente University; 2003.
[6] Energy Research Centre of The Netherlands. Energy market trends in The Netherlands in 2001. ECN Policy Studies. The Netherlands: Petten; 2001.
[7] Agterbosch S, Vermeulen W, Glasbergen P. Implementation of wind energy in The Netherlands: the importance of the social-institutional setting. Energy Policy 2004;32:2049–66.
[8] Van Damme E. Liberalizing the Dutch electricity market:1998–2004. Tilburg: CentEr and TILEC, Tilburg University; 2005.
[9] KEMA. Dutch Windmonitor. http://www.windmonitor.nl; 2003.
[10] Wind Service Holland. Internetsite of wind service Holland. http://home.wxs.nl/~windsh/; 2003/2004 (in Dutch).
[11] Bongers FJ. Participatory policy analysis and groups support systems. Tilburg: Van Spaendonck; 2000.
[12] Van de Herik CW. Groups support for policy making. Delft: Delft University of Technology; 1998.
[13] Vreede GJ, Krans RL. Ervaringen met Expertconsultatie door Elektronische vergadersystemen. Bedrijfskunde, Tijdschrift voor modern management 2001;73:70–7.
[14] Bongers FJ, Wiering MA, Glasbergen P, Smits REHM. Het beleidslaboratorium aan de Universiteit Utrecht Een definiërings- en haalbaarheidsstudie naar de ontwikkeling van een beleidslaboratorium ten behoeve van duurzame ontwikkeling en innovatiemanagement. Utrecht: Utrecht University/Dialogic; 2001.
[15] Van Buuren PJJ, Backes ChJ, De Gier AAJ. Hoofdlijnen Ruimtelijk Bestuursrecht, 4rd ed. Deventer: Kluwer; 2002.
[16] Van Duyn M. Nederland win(d)energie! Onderzoek naar de uitwerking en mate van doelbereiking van de Bestuursovereenkomst Landelijke Ontwikkeling Windenergie. Final project: environmental studies and policy. Utrecht: Copernicus Institute, Utrecht University; 2005.
[17] Haijer M, Zonneveld W. Spatial planning in a network society—rethinking the principles of planning in The Netherlands. European Planning Studies 2000;8:337–55.
[18] Backes ChJ. Personal communication. Professor Environmental Law. Utrecht: Utrecht University; 24 March 2004.
[19] De Lange F. The end of "actio-popularis" in Dutch law? Recent developments concerning locus standi criteria in planning and environmental law in The Netherlands. NELN Workshop on Planning Law and integrated resource management, Copenhagen; 2003.
[20] Agterbosch S, Vermeulen W. Rapportage implementatie van windenergie in Nederland. Beleidslabsessie met marktpartijen en lokale overheden. Research Report Copernicus Institute. Utrecht: Utrecht University; 2005.